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ABSTRACT

During the past four years several persons from The Ohio State University and the Westerville, Ohio public schools have worked together to develop and validate a systematic way of classifying, organizing, storing, and retrieving curriculum materials in terms of human variability as that relates to learning in school. The purpose of this paper is to sketch the nature of that developmental effort in outline form. Six steps of this developmental effort are briefly described. These six steps comprise a general overview of ideas and approximate sequence of events. A review of these six phases of the developmental process will enable the reader to gain a reasonably accurate feel for what took place. The six steps were as follows: articulating a conceptual framework; clarifying theoretical and operational assumptions that were involved; establishing a working relationship between the university and the public school system involved; devising systematic procedures for classifying curriculum materials in terms of human variability; identifying problems associated with using the system; and exploring possibilities for using the system in research and staff development activities as well as teaching. The result of this effort has been labeled the Annehurst Curriculum Classification System (ACCS). ACCS is intended to be a practical way for teachers to individualize instruction by matching learners' interests, abilities, and needs with curriculum materials that are precisely appropriate for each learner involved. (Author/MV)

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DEVELOPMENT AND VALIDATION OF THE ANNEHURST CURRICULUM CLASSIFICATION SYSTEM

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Introduction

Progress and improvement in any area of human endeavor is generally difficult, costly, and slow. Progress and improvement in education is no exception. During the past four years several persons from The Ohio State University and the Westerville, Ohio public schools have worked together to develop and validate a systematic way of classifying, organizing, storing, and retrieving curriculum materials in terms of human variability as that relates to learning in school. The purpose of this paper will be to sketch the nature of that developmental effort in outline form. More complete information will be available in published form within the next few months.[2]

In the sections that follow, six steps of the developmental effort are briefly described. Taken together, these six steps comprise a general overview of ideas and an approximate sequence of events as they occurred. Needless to say, the elaboration of ideas is not complete and the sequence of events is not precise. Even so, a review of these six phases of the developmental process will enable the reader to gain a reasonably accurate "feel" for what took place. The six steps were as follows: articulating a conceptual framework; clarifying theoretical and operational assumptions that

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were involved; establishing a working relationship between the university and the public school system involved; devising systematic procedures for classifying curriculum materials in terms of human variability; identifying problems associated with using the system; and exploring possibilities for using the system in research and staff development activities as well as teaching.

Each of these six steps is described below. In the remaining portion of this paper, the system which was being developed and which is being described here - Annehurst Curriculum Classification System - will be referred to as ACCS.

Conceptual Framework

Schools exist to help young people learn. Learning occurs if students develop or modify their behavior as a result of experience; that is, if students change. However, learning may be desirable or undesirable. In other words, changes in learning behavior may develop along hoped-for lines (e.g., students read better after instruction than they did before), or such changes may develop along less desirable lines (e.g., students may learn to dislike school or learn to cheat.)

Teachers and others hope that the experiences created in schools will foster young people's learning in appropriate ways. If learning manifests itself in behavioral changes, then we need to understand the factors that affect behavior.

In this section we will look at five sets of ideas that were a part of the conceptual framework underguiding the development of ACCS: (1) a schooling paradigm, (2) the interaction of the individual with the environment; (3) the purposes of schooling; (4) the reality of individual differences; and (5) conditions essential for fostering individual development and growth. Each of these four sets of ideas is explained below.

A Schooling Paradigm: Education goes on everywhere: at home, at work, at school, at play. Schooling involves learning that is more narrowly conceived and precisely focused than education in general. Graphically, schooling might be portrayed as follows:

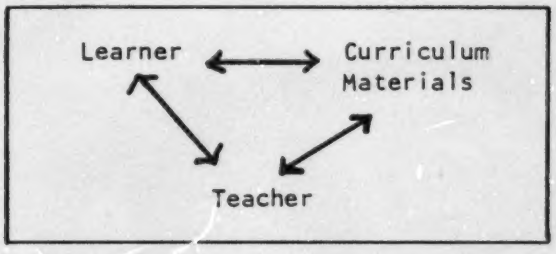

Figure 1. A Schooling Paradigm

In this paradigm, four aspects of schooling are apparent: the learner, curriculum materials, the teacher, and the setting (as evidenced by the enclosing rectangle).

The teacher works within the framework of a particular setting (i.e., school building, classroom, school district, or institution). The setting includes the traditions, policies, practices, governance structures, authority relationships, and the like that make a school a school.

The teacher is a central element in the paradigm, too. Working within the framework of a particular school setting, the teacher uses himself or herself to relate to learners and to relate to curriculum materials with the intention of helping students learn.

Functioning in a different but related way, learners use the curriculum materials made available by the teacher in their own efforts to learn. Furthermore, learners can be thought about and characterized in many ways: intellectually, experientially, motivationally, socially, physically, creatively, and in other ways.

Curriculum materials can be thought about and characterized in many ways, too. Materials may be accurate or inaccurate, attractive or unattractive, interesting or dull, acceptable, or unacceptable, and in other ways.

The point is, schooling involves learners, curriculum materials, teachers, and some kind of institutional setting. ACCS has been developed to help teachers make the best match possible between learners and curriculum materials.

Learners are different and curriculum materials are different. Further, learners can be characterized in particular ways, and curriculum materials can be characterized in particular ways. Within a schooling paradigm, the basic purpose of ACCS is to help teachers create a match between a particular learner and particular curriculum materials that will enable the student to learn effectively and enjoyably.

Conceptually, ACCS is a linking mechanism. It helps teachers bring learners and curriculum materials together in ways that will maximize learning.

Individual and Environment: There are three basic perspectives that may be used to try to understand what and how and why people learn; that is, what and how and why a learner's behavior changes over time.

The first perspective focuses primarily upon the individual: what the person is like psychologically, physically, and otherwise. This perspective attempts to explain learning in terms of an individual's motivations, cognitive style, intellectual attitudes, sensory modalities, values, basal metabolic rate, blood chemistry, and physical endurance, for example.

The second perspective focuses primarily upon environmental factors: quantity and quality of stimuli available, sequencing of stimuli, nature and frequency of reinforcement, and the like. This perspective attempts to explain learning in terms of those phenomena that are manipulable and controllable by teachers and others.

The third perspective focuses directly upon the interaction of the individual with the environmental factors: what information the learner wants, what reinforcement the learner needs, or which particular sequence of stimuli are most meaningful to the particular learner involved, for instance.

ACCS was developed on the basis of this third perspective.

Lewin first developed the concept that behavior is a function of the life space,[3] and he assumed that life space is a product of the interaction of the person and the environment. More recently, Hunt[4] has developed those notions further. ACCS is predicated upon this interactive concept, but it also presumes that effective schooling requires that the interaction occur in a particular sequence: the teacher must first understand the individual learner, and then the environment must be manipulated in attempts to maximize that individual's personal learning. In other words, comprehending the reality of the complex human being who is the learner is step one. Selecting curriculum materials, contriving experiences, employing certain instructional methodologies, and the like are a part of step two.

Suppose we look at some of what we know about the individual and the environment in more detail. Perhaps a more elaborate delineation will make it possible to understand more fully the nature of the interactions between the individual and the environment. For example, any consideration of the various aspects of individuals and environment make it evident that there are several different types of factors characteristic of each: some factors are fairly constant and relatively unchanging; other factors vary in a more or less constant manner over time; still other factors are much more variable and amenable to influence and change. Such a consideration might be postulated in outline form as follows:

I. Individual

   A. constant factors
   B. constant variable factors
   C. variable factors

II. Environment

   A. constant factors
   B. constant variable factors
   C. variable factors

Categories such as these may be misleading, since they imply either-or distinctions that are seldom as neat and clean in reality as they are portrayed on paper. Even so, some categorization of factors in this way is probably applicable and essentially correct most of the time, so such a categorization may provide certain useful constraints to help us sort out some of the nuances and interrelationships that are involved.

For example, the following are suggested as specific instances of the various categories postulated above:

I. Individual

A. Constant factors: sex, blood type, race, need for oxygen, shape of eyeball, etc.
B. Constant variable factors: height, age, strength, hair thickness, muscle length, etc.
C. Variable factors: experience, weight, personality, motivation, blood chemistry, etc.

II. Environment

A. Constant factors: quality of school building as a structure, time available per day, etc.
B. Constant variable factors: age of textbooks, experience of teachers, etc.
C. Variable factors: subject matter encountered, frequency of repetition, sequence of subject matter encountered, punishment-reward system, etc.

For both the individual and the environment, each of these sets of categories constitutes a continuum of sorts. That is, moving conceptually from constant factors through constant variable factors on to variable factors evidences a continuum, one end of which represents factors that are more or less static and unchanging, and the other end of which represents factors that are dynamic and changing.

If this conceptualization is reasonably accurate - that is, if the correspondence between these ideas and reality is high - then it becomes possible to identify potential leverage points and areas where intervention might lead to change.

Starting with the premise that learning occurs as a function of the interaction of the individual with the environment, suppose we expand our conceptual framework now to a consideration of the purposes of education.

Purposes: Schooling is not without direction.[5] The purposes or goals of schools are always implicit in the endeavor if not expressly stated, and they can be ferreted out, if not readily conspicuous, for all to see.

Some educational theoristis make the point that the purposes of schooling stem primarily from three sources: the nature of knowledge; the nature of society; and the nature of the individual.[6] These are not the only sources, to be sure, but they do represent three places that educators go - for information and for inspiration - when they contrive experiences for students in schools.

In theory, persons responsible for determining purposes and building educational programs use these three sources of information equally. In practice, the different sources are drawn upon in various degrees. The result is that different philosophical positions are taken that reflect the individual value systems of the particular people who are involved.[7]

Because the different positions described above give rise to different kinds of educational purposes and programs, it is crucial to try to understand

how such positions are actually related to learners' needs. And learners do have needs: academic needs, social needs, and individual needs. The question is: which needs are most pressing and most important at any given point in time.

The problem, at least in part, is a problem of ends and means. I want to argue that the individual is the end, subject matter is the means, and society is the result.

What does the individual really need to develop and learn and grow? In physical terms, a lot is known about what individuals need, but when attention is shifted to psychological and educational needs, a great void appears. Every human being anywhere in the world needs food and water and oxygen, for example. We know with considerable precision, in fact, which foods, which minerals, which substances are absolutely essential to the maintenance of physical life. Can we learn - from experience in teaching and from research - which facts, which concepts, which processes are absolutely essential to the maintenance and enhancement of an individual's personal growth and development in an educational way?

ACCS has been conceptualized and made operational with that particular question squarely in mind.

These ideas lead to the fact that people are different. In the next section, the notion of individual differences is explored and described.

People are Different: The reality of individual differences has been an important part of the conceptual framework within which ACCS has been developed. Some anthropologists suggest that every person in the world is identical to every other person in certain ways, they are similar to some other persons in other ways, and they are unique and different in still other ways. All of these notions are important for people who work in schools. ACCS, however, presumes that the last point is especially important. Those who participated in the development of ACCS started from the premise that understanding the nature of individuality was both possible and important to do. They presumed that honoring the nature of the differences that existed within and between individuals was possible and important, too.

The idea that "people are different" is based primarily upon the demonstrable facts that relate directly to personal experience and genetic make-up.

All of us are prisoners of our past experience. Experience resides within us as achievement; a residue that we call "memory" or "what we have learned." From what we know about this process of perception, it is readily apparent that past experience exerts a profound and pervasive effect on present experiencing.[8]

We are prisoners, in effect, of what we have done and where we have been and what we have seen and heard. But each of us is in a different prison. Experientially, we are unique. Each person is unique. The world that I have experienced is different than the world that you have heard or touched or seen.

That which makes each person unique is the nature of their knowledge, and knowledge comes after experience,[9] it never precedes. Knowledge does not exist outside of people's experience. It always inheres within their tissues and their being after experience has come and gone.

Experience, of course, is the product of the interaction of the individual with the environment. We can impinge upon experience by altering environment in various ways, but it is in the interaction of past experience and present environment that learning and development and behavioral change occur.

Fostering Growth: If it is true that people are different, and if it is true that learning is a function of the interaction of the individual with the environment, then a prime task for teachers is to learn how to understand the nature of individuality and then arrange the environment in ways that will enable individual students to learn. Two concepts from political science may be helpful here: freedom and equality.

Freedom means many things to many people, but freedom is an individual dimension of human existence. Equality means many things to many people, but equality is a social dimension of human existence. Freedom represents the opportunity of one person to pursue any one of several goals. Equality represents the opportunity of many people to pursue any one particular goal.

I define freedom as the opportunity of an individual to exercise personal choice. But we can think of freedom as a dimension - as a continuum, if you please - one end of which is represented by the notion of choice, and the other end of which is represented by the notion of restriction or non-choice.

We can also think of equality as a dimension - a continuum, if you please - one end of which is represented by the concept of difference or diversity, and the other end of which is represented by the notion of sameness or similarity.

We can further imagine those two dimensions intersecting and interacting in a variety of ways. When these two dimensions intersect and interact in such a way that choice is maximized and difference and diversity are encouraged, we create conditions which foster development and growth. When these two dimensions intersect and interact in such a way that choice is minimized and sameness and similarity are encouraged, however, we create conditions which foster control.

Conditions that foster growth foster the development of independent human behavior. Conditions that foster control foster the development of dependent human behavior. That is, conditions which foster growth create an inclination toward independence. Conditions which foster control create a tendency toward dependency. Figure 2 below outlines these concepts in graphic ways.

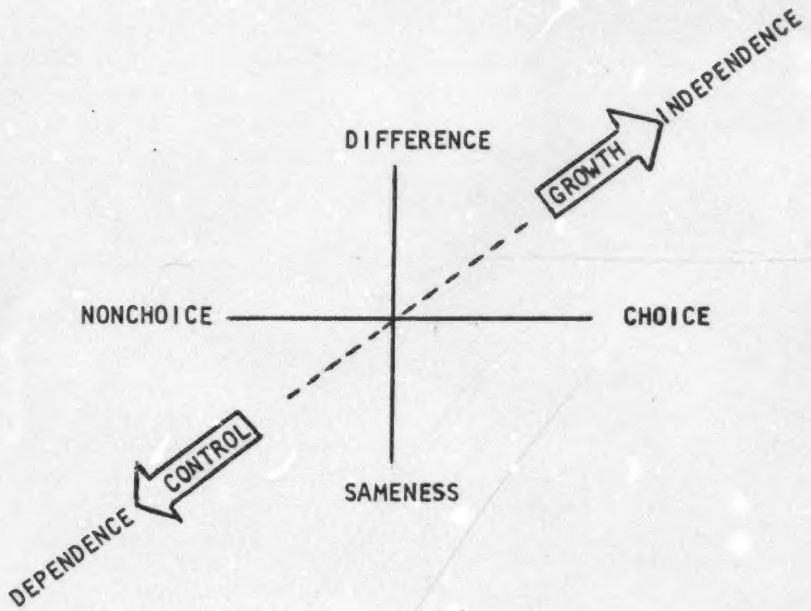

Figure 2. Freedom and Equality Dimensions

Choice is only possible if alternatives exist, and choice is only meaningful if differences are real. Differences are possible only if choice is encouraged (or at least allowed), and differences are meaningful only if choice is genuine or real. Anything which limits choice and encourages or emphasizes sameness results in conditions that are inimical to development and growth. ACCS has been developed with the basic ideas of "choice" and "difference" very much in mind.

In the next section, specific assumptions that have been incorporated into the Annehurst Curriculum Classification System (ACCS) are articulated and justified.

The Assumptions Inherent in ACCS

The description of the conceptual framework within which the Annehurst Curriculum Classification System was developed emobodies a number of assumptions. Many of these were set forth as postulates or given as that conceptual framework was described. In this section that process is continued. To give visibility to the theoretical and operational premises on which ACCS has been built, these assumptions have been brought together in one place. It is hoped that this will make it easier for readers both to understand and challenge the basic premises that are involved.

Using Existing Materials: There are at least three different ways in which teachers and schools can get curriculum materials: creation, selection, or collection. Creating curriculum materials involves such things as writing, producing films, building units, and the like. Selecting curriculum materials typically involves reviewing and adopting a particular textbook, say, or choosing one or more films or books or workbooks from a catalog or display for use in the classroom. Collecting curriculum materials involves bringing any and all materials together in some organized way for later use.

> The Annehurst Curriculum Classification System is a way of collecting, organizing, storing, retrieving, and using curriculum materials that have been classified in terms of individuals' learning differences and in the personal learning needs.

ACCS is An Open System: For many reasons - some theoretical and some practical - it was decided at the outset that ACCS should be an "open" system; that is, it should be incomplete, open-ended, able to "grow." Some information systems (e.g., encyclopedia) have been conceptualized "all the way," so to speak. Additions or modifications are only possible with the publication of revised editions. Acknowledging the fact that information is being generated steadily and that teacher's awareness and understanding of subject matter increases steadily, too, it was felt that the curriculum system being developed should be capable of incorporating additional materials and new topics without undergoing complete revision. To make that possible, "open space" was built into the conceptualization of ACCS from the start.

> The Annehurst Curriculum Classification System can be expanded by adding new disciplines, subject matter areas, divisions, and topics as additional curriculum materials become available. No modification of the conceptual basis for classifying materials is required.

The fact that ACCS is an open system means that its usefulness should increase with time rather than decrease. The range and depth of curriculum materials will be expanded and extended, and the collection of materials will become more valuable and more relevant as the years go by.

Organizing the Environment: When school people use the word "organize," they generally are referring to organizational concepts as applied to people, space, and time. For example, organizational aspects of a school typically include consideration of such phenomena as age-grade level, teacher-student ratio, modular scheduling, team teaching, a school-within-a-school, attendance areas, school district consolidation, and the like. Within a classroom, organizational concerns relate to grouping students according to achievement for instructional purposes, for example.

> The Annehurst Curriculum Classification System organizes curriculum materials (rather than people) in such a way that people are encouraged to use their intelligence and motivation to interact with those materials.

ACCS is User-Oriented: Those persons who worked in the development of ACCS continuously asked two related questions: Will the system be practical? Will it be valid? They did not always use those words, but those were the major concerns.

When the developers asked, "Will the system be practical?" They were really pressing questions that had to do with utilization of the system: Will it be useful? Will people be able to comprehend it? Will extensive and specialized training be required, or will typical teachers in typical schools be able to understand it and use it in their teaching right away?

When the developers pressed the validity questions, they were really insisting that the system correspond to the reality of schools "out there." Will the system be capable of subsuming curriculum materials from any subject matter field - art, history, physical education, home-economics, biology, mathematics, and the like - and will it be helpful to teachers who work with learners at any age level? That is, will the system have applicability for kindergarten teachers, junior high school teachers, and college teachers? "There is a real world out there, with real teachers, real students, and real schools. Will this system work in those schools? Will it help those students and those teachers who are there right now?"

The Annehurst Curriculum System must meet the needs of the teachers who are in the schools today.

The language, the concepts, the procedures - all must have relevance for those persons who live and work and learn in schools every day. ACCS must be user-oriented.

Small Pieces, More Materials, and Variable Sequences: Educational programs and curriculum materials have changed some in recent years, but, generally speaking, conventional conceptions of curriculum are usually characterized in three ways: curriculum materials are fairly large in size, limited in number, and fixed in sequence. The fact that curriculum materials are characterized in these three ways means that a number of unintended consequences often accrue that impact upon teaching and teachers and students in negative ways.

The fact that the conventional conceptions of curriculum can be characterized as being fairly large in size, limited in number, and fixed in sequence has very direct implications for those who teach and those who learn.

First, choice is restricted. Options are only possible if there is much material from which to choose; much more than could possibly be utilized given any reasonable period of time.

Second, uniformity and similarity are encouraged simply by virtue of the fact that there is one textbook for all students, and all students are generally expected to go through the same book at about the same pace and in much the same way.

Finally, because the amount of material is limited and the sequence is pretty much fixed, the curriculum material tends to become less interesting to teachers over time. The materials may or may not be interesting to students. From the teachers point of view, however, having to go through the

same textbook, year after year, becomes a routine, monotonous, disinteresting educational experience.

We do not generally think about curriculum materials in terms of teachers' interest, but one could make a very good case for the point that teachers tend to get "sick and tired" of using the same textbook year after year. We are just beginning to recognize that "going through" the same textbook becomes routine and boring to the teachers who have to use those curriculum materials.

> Curriculum materials in the Annehurst Curriculum Classification System must be small in size, extensive in amount, and variable in sequence.

Small curriculum materials such as single page items, photographs, reprints, pamphlets, workbooks, worksheets, film strips, single concept film loops, clippings from newspapers, statistical sheets and graphs, and similar "small" items will be included in ACCS.

Further, there should probably be at least one hundred times as much curriculum material available to a teacher than is typically available. If it is possible to increase the amount of curriculum material immediately available to a teacher dramatically, that will automatically result in two things: choice will be more possible, and the teacher will not possibly be able "to know" in any authoritative way all there is to know about all of that additional curriculum material. What seems to be a severe handicap for the teacher (i.e., having available hugh amounts of curriculum material with which the teacher is not intimately familiar), can actually free that teacher from an authority role and make it possible for the teacher to shift to a helping role. In other words, the teacher and the learner can approach the possibility of learning together. This is akin to the traditional university concept of "community of scholars" in which teachers and learners interact with the environment (i.e., the curriculum) in collaborative, supportive ways.

One additional possibility should be described. If curriculum materials are smaller in size, larger in number, and variable in sequence, then teachers will be able to search the system and create new and different patterns of materials for each learner. In actual practice this will mean that teachers will regularly and continuously confront themselves with new and unique sequences and arrangements of information and materials. They will not be bored. On the contrary, they will be stimulated intellectually. Curriculum will remain fresh and interesting to teachers, as well as be relevant and appropriate to learners.

Organizing Materials for Retrieval: The discussion above leads directly to another assumption inherent in ACCS, namely, that curriculum materials must be organized in such a way that teachers and learners can find what they need, when they need it, and find it quickly.

> The Annehurst Curriculum Classification System should organize curriculum materials so that they may be quickly and accurately retrieved in terms of human characteristics.

Those who were involved in the development of ACCS assumed that curriculum materials are a part of the environment. They further assumed that it

was important to organize the environment in such a way that teachers and learners could interact with that environment creatively and effectively. That meant, in effect, that the environment had to be organized in human terms.

Emphasis on the Individual: Learning is like dying. A person has to do it all alone. Other people can be there; they can provide encouragement or information or consolation. In the final analysis, however, learning is a very personal thing.

Because learning is so personal, contriving an environment (i.e., creating a curriculum system) to foster learning must be based on what is known about the nature and nurture of individuality.

> The Annehurst Curriculum Classification System should be built upon those dimensions of human existence that relate most directly to learning.

From a developmental perspective, this meant that the development team had to make every effort to comprehend both the totality and specificity of individual existence first, and to build a curriculum system based upon that understanding after that. Furthermore, the understanding of individuality had to be broad enough to encompass awareness of variations among people of all ages, all races, all cultural backgrounds, and both sexes, but always from a learning point of view.

Decisions Are In the Teacher's Hands: There has been occasional talk about developing curriculum systems that would be "teacher proof." Some developers have felt that teachers might "misuse" materials or "not know enough" to use curriculum materials properly, so these developers have attempted to produce things that could not be utilized in ways other than those intended by the developers. ACCS is built upon a different set of suppositions.

> The Annehurst Curriculum Classification System is a way of classifying, organizing, storing, and retrieving curriculum materials so that teachers will have complete access to any materials to use in any ways that they feel are educationally effective and professionally appropriate.

The teacher is the one person most capable of determining which specific curriculum materials would be most helpful to particular learners at any precise point in time. ACCS has been developed in ways that require the teacher to assume more rather than less responsibility for decision making about both materials and methods. The classroom teacher is the only person, in fact, who knows enough about the learner, the subject matter area, and the situation to make those decisions.

Value Diversity and Encourage Choice: The notions of diversity and choice have been discussed before, but it should be stated again that the intentions of those who developed ACCS were that more curriculum materials should be made available rather than less, and diversity among both materials and people was to be valued rather than abhorred.

> The Annehurst Curriculum Classification System should include many materials of many types in such a way that they will be

available to teachers to encourage development and growth of learners in divergent as well as convergent ways.

Sometimes it may be important to work toward agreement among learners as, for example, may be evident in teaching "vocabulary development" or "how to multiply numerals." The system must be such, however, that uniqueness and diversity are also possible and probable, though, if these seem to be appropriate educational goals.

Critiquing ACCS: What has been attempted here is an explication of some of the root premises upon which ACCS rests. It is assumed that this explicit description of the bases of the system will foster understanding and discussion of the system, because:

The Annehurst Curriculum Classification can be further developed (i.e., it will "grow") to the extent that it is understood and examined and criticized and used.

Readers and users are encouraged to critique this sytem and to submit their assessments and critiques to the author.

Establishing a Working Relationship

During the spring of 1976 one of the graduate students in Curriculum and Foundations at The Ohio State University said to me: "You ought to visit Annehurst School. They are doing some very interesting things out there. The staff of that school, in fact, would like to explore the possibility of working with the 'School For Tomorrow' writing team to implement some of those ideas in their school."

"Where is the Annehurst School?" I asked. "How do they know about 'A School For Tomorrow? I never even heard of Annehurst."

Thus, it began. During that spring I was invited to Annehurst School in Westerville, Ohio to discover that, indeed, many of the staff members there had already been engaged in a series of indepth discussions of working drafts of various chapters of what was to be published the following year as A School For Tomorrow. We had a fascinating session that afternoon - exploring concepts, examining possibilities; and getting to know each other - and when I left the school that afternoon, I realized that Annehurst was an exciting school with an intelligent, dedicated staff, and superb leadership.

During the next several months, Troy Mills, the principal at Annehurst, and I began to look at various possibilities regarding a working relationship between the Annehurst School and the Faculty of Curriculum and Foundations at Ohio State. Because Troy Mills and I were both line administrators at the time (he was principal and I was department chairman), communication about that relationship was direct and action-oriented.

By the end of Autumn Quarter, 1972, we had negotiated an agreement between the Westerville Public Schools and the Faculty of Curriculum and Foundations at The Ohio State University. In early January, 1973, the Westerville Board of Education officially approved the agreement. The agreement stipulated four things:

(1) Westerville Public Schools would pay The Ohio State University a certain sum of money during the calendar year, 1973. All of the money would be used to support graduate students or purchase materials. None of the money would go to individual professors, either directly or indirectly.

(2) Several members of the Faculty of Curriculum and Foundations would work regularly at the Annehurst School with the Annehurst staff for a minimum specified period of time.

(3) The Annehurst staff and the university staff would work together to attempt to implement some of the ideas described in A School For Tomorrow, but the university staff members would be responsive to the Annehurst staff members' concerns and needs.

(4) The commitment to work together would be for "an extended period of time" (i.e., more than one year, certainly, but probably less than five).

During the next three years we had a formal working relationship, and for almost eighteen months since that formal relationship has ended we have continued to work together regularly.

Several working groups were formed that functioned in various ways. The Curriculum Task Group, which assumed responsibility for developing and validating ACCS, has worked together during that entire four and a half year period of time. Other groups have worked together in other ways.

The membership of the Curriculum Task Group was reasonably stable throughout that entire time. There were about six teachers, two administrators, one graduate student, and one professor. Graduate student members changed each year, one teacher moved to another city, one teacher took maternity leave, and two teachers joined the group. Other than that, however, membership in the task group was constant.

We worked together, generally once a week, for about two or three hours at a time. During part of that period the teachers received five dollars an hour for their participation, but much of the time there were no special incentives at all.

The group accomplished three things during the years that they functioned together as a working group:

(1) We conceptualized and made operational a curriculum classification system for assisting teachers in meeting the unique learning needs of individual learners in their school.

(2) We uncovered a whole series of staff development and research possibilities related to the use of the curriculum classification system that was unimaginable just a few years ago.

(3) We learned a lot about what it takes to make developmental efforts involving university and public school people really "go."

In the section that follows, the specific steps that we followed in developing and validating ACCS are described.

Developing ACCS

In this section, the six-step plan that the task group responsible for developing ACCS followed, will be described.

First, we identified those dimensions of human existence which affect the learning of individuals in school. Second, we developed a thesaurus. Third, we defined each of these dimensions in terms of "high" and "low." Fourth, we studied hundreds of pieces of curriculum material to identify characteristics of curriculum materials. Fifth, we "matched" curriculum characteristics with each of the human factors that had been identified as especially significant. Sixth, we hypothesized that curriculum materials classified in terms of human factors that affect learning will enable teachers to match "learner's needs" and "curriculum materials" more precisely than heretofore, thus enabling teachers to teach more effectively and students to learn better than conventional curriculum systems enable teachers to teach or students to learn. Following that, we identified possible sources of error that might affect this hypothesis, and we plan to study these possible sources of error carefully. Each of these steps is decribed more fully below.

In the description that follows there may seem to be a neat "one - two - three" to the logic of events. Things did not actually occur that way. This developmental effort was characterized by many false starts and a lot of "back and forthing." There is probably no good way to reconstruct what we did precisely and carefully, even though fairly good records were maintained throughout the entire period of time. We were coping with complex phenomena using conceptual and observational and linguistic tools that were only partially developed and that had to be created "on the job," so to speak.

In retrospect, it would probably be fairly accurate to characterize our developmental effort in these three ways: we were not problem-oriented in the main; our activities evolved (rather than being carefully planned for); and we tried to deal with "the whole thing."

For example, those of us who worked to develop the Annehurst Curriculum Classification System (ACCS) dealt with both problems and possibilities, but we were <u>not</u> primarily "problem-oriented." We were concerned about validity and utility all of the time, but our outlook was focused on possibilities and potentialities. At one level we were always experiencing problems and frustrations; at another level, however, the basic aim of our efforts was to transcend the existing realities and create a new and hopefully better conception of curriculum than any of us had ever heard or ever dreamed about.

Further, our efforts unfolded and evolved. We did not specify precisely what we were going to do next. We seldom knew. We started with a general commitment to individual learners, and we had a rough understanding of the abstract ideas that had been outlined in <u>A School For Tomorrow</u> regarding curriculum.[10]

We struggled for many months to "get hold of the problem" in some creative but manageable way (and even here, "problem" does not seem to be the appropriate word). Some would probably argue that our difficulties were a function of the fact that we had not planned out carefully and specifically what we intended to do. Reflecting back upon the process now, it still seems that that would not have been possible. Our weekly sessions of working on the possibilities became necessary prerequisites to planning how we ought to explore and cultivate these possibilities. We had to spend each week grappling with our task (we were reasonably clear about our general commitment) in order to understand the particular "pieces" well enough to plan next steps.

It may be too much to infer from this that developmental efforts (as opposed to research or instructional efforts) should depend upon a "plan-as-you-go-along" strategy, but elaborate preplanning would undoubtedly have caused us to fail completely or to achieve an objective that was not actually the one we hoped to achieve.

One final observation before we proceed to describe the six steps we followed in detail. This observation relates to the complexity of the reality with which we were dealing. In effect, what we actually attempted to do, without being fully conscious of it at all, was to cope with the "whole thing." We dealt with the totality of the complex aspects of curriculum, in other words, and made almost no effort to reduce the task to a manageable size.

There were certain parameters, to be sure, but the task group tended to work with the many factors and facets involved in conceptualizing a comprehensive curriculum system for an entire school. The complexities of the task were often frustrating, but they were fascinating, too. The myriad of details and perspective "gave us fits" all of the time, but the intricacies and nuances of this totality were provocative and evocative and intriguing. Personally, I feel that our (generally) unconscious decision to deal with "the whole thing", including its complexities, was one of the factors which kept us working month after month.

With this general perspective in mind, suppose we move now to a detailed consideration of the developmental steps that were set forth before. We began this developmental effort by attempting to identify the most significant dimensions of human existence that affect learning.

Human Factors That Affect Learning: Working with two separate groups - the Curriculum Task Group at Annehurst School, and a group of forty-two experienced teachers enrolled in a graduate course in curriculum at The Ohio State University - the author asked each group to "brainstorm" in an attempt to identify those aspects of human existence that these teachers felt influence learning significantly in school. In both of these ventures the "rules" of "brainstorming" were followed. Both groups of experienced teachers generated a long list of things that their training and experience suggested to them were important factors. More than **ninety** specific items were listed in these processes.

In both situations, small groups of four to six teachers then met together for approximately an hour and attempted to "cluster" the specific items generated by the total group into "factors" or "dimensions" that seemed to hang together. Upon completing this process, each small group then labeled the "clusters" of items, or "factors," as they were called. This "poor man's factor

analysis," which relied upon teachers' experiences and training rather than statistical models and procedures, was accomplished separately by eleven different small groups, then collected by the author and carefully studied.

Three types of factors were identified: (1) those that included attributes or phenomena that were indirectly related to a student's learning, such as educational level of the father or whether both parents lived at home; (2) those that related directly to a learner's interest in a particular subject matter area or topic; and (3) those that were an integral part of the being of the learner such as intelligence or motivation, say.

For the purpose of this project, those factors identified that were only indirectly related to a student's learning in school were defined outside the realm of consideration of what ultimately would constitute a curriculum system for fostering personal development and individual learning and growth.

Those items that related to learner's interest in particular subject matter topics or ideas or skills comprised the second group of factors that were identified. Even though these phenomena existed outside of the learner, in a sense, interest in a particular topic was a direct expression of an individual learner. It was decided, therefore, that information about subject matter areas should be organized in such a way that students and teachers could both relate learner interest and curriculum materials directly and effectively. The way in which this was accomplished is described in the section below (i.e., "Developing a Thesaurus").

The remaining set of factors, those that were felt to be an integral part of the very being of the learner, were then singled out for further conceptual development and definition. The way in which this was accomplished is describing in the section below (i.e., "Defining Human Characteristics").

Developing A Thesaurus: A thesaurus is a storehouse or repository; it is a book containing a store of words. In practical terms, a thesaurus is a way or organizing information in such a way that it can be readily retrieved or recalled. If the thesaurus has to deal with learner's interests, it has to deal with the universe of knowledge, because learners may be interested in anything or everything. The task group discovered very quickly that they needed to invent or adopt a theory of knowledge - a conceptualization of subject matter areas - that would be broad enough to encompass any interest that a particular student might have, and deep enough to specify the details of that subject matter area in ways that would be helpful to the learner.

Needless to say, we soon recognized that we had a task of monumental proportions to accomplish. To begin, therefore, we set out to do three things. After we had "been through" these three experiences, then we set three additional tasks to be accomplished. I will begin by reviewing the chain of events and describing briefly the three activities that were undertaken at the outset: curriculum materials were collected in the general area of ecology; a faculty seminar was conducted by Ralph Tyler for ten weeks in which task group members participated; and several existing systems of information storage and retrieval were studied carefully.

We began by collecting materials. We started with an area of contemporary concern, and one which cut across the boundaries of many conventional academic

materials according to a preconceived rationale. "Ecology" was the subject matter area. Using the five factors identified by the Club of Rome report[11] - population, capital, food, nonrenewable resources, and pollution - more than fifty experienced teachers who were in a graduate course in curriculum collected curriculum materials that varied in format (e.g., printed material, photographs, statistical data, etc.) along each of these five dimensions. Hundreds of pieces of curriculum material were made available to the task group for their analysis and use.

Members of the Curriculum Task Group working to develop the Annehurst Curriculum Classification System studied these materials and developed classification schemes for categorizing various items.

During this same period of time (Winter, 1973), Ralph Tyler conducted a seminar on the campus of The Ohio State University for a small group of university faculty and several members of the Curriculum Task Group. In this seminar several alternative assumptions regarding both curriculum and curriculum development were examined. The variety and purposes of content, interactive processes, and the like were explored. Throughout this seminar, "ecology" served as the focusing theme.

Upon the completion of the seminar, the Curriculum Task Group then set out to study a range of concepts and procedures for organizing, storing, and retrieving information. Working directly with personnel in the Information Science Division of Battelle Memorial Laboratories, they studied various abstracting systems, computer systems, card file systems, and other systems. At the same time, an indepth study was also made of the Dewey Decimal Classification System and the Library of Congress Classification System. Finally, a careful examination of The Ohio State University catalog was also made. Next, the task group undertook an intensive study of all of the curriculum materials in their school and some in other schools. Then, they made a decision to purchase a particular hardware system. Finally, they developed a thesaurus for curriculum materials that were used in the Annehurst School.

A workshop for staff was conducted before school started in 1974, and the thesaurus was outlined and the outline filled in from 3 x 5 cards that had been developed during a careful study of curriculum materials earlier. The thesaurus was the result of these efforts. It is user-oriented, open to further development, and simple to use. However, all the thesaurus does is organize information about curriculum materials in such a way that learner interests may be utilized. What students are interested in is a very important attribute for a curriculum system designed to help individual students learn, but interests are not enough. There are many other aspects of what it means to be a learner that had to be addressed and conceptualized, too. The next section discusses those human factors and the curriculum system in detail.

Defining Human Factors That Affect Learning: Before the thesaurus had been developed, the task group had identified certain factors or dimensions of human existence that were thought to be directly related to an individual student's learning. These "factors" had been generated out of brainstorming sessions in which specific human qualities had been identified first and then clustered together in what seemed to be logical ways. Following this, we began what ultimately became a six-step series of activities that finally resulted in a list of ten dimensions of human existence (i.e., "factors") that

affect learning that were defined by means of what came to be called an "elaborated continuum." (See Appendix A).

The six steps were as follows: two small groups of educational psychologists and instructional specialists reviewed our list of factors; a conceptual framework for defining each factor was devised; a group of experienced teachers verified and modified the initial determination and definition of factors; selected members of the American Educational Research Association were polled with a specially developed questionnaire; the original list of dimensions was modified and each dimension was redefined on the basis of these questionnaire responses; each dimension was further examined and redefined by the task group for a final time. The details of each of these six steps is spelled out briefly below.

First, two small groups of educational psychologists and instructional specialists reviewed the original list of factors (or "clusters" that had been created in small group discussions of the items that had first been generated in the "brainstorming" sessions). The author met separately with each of these groups, shared written information about the factors that had been identified, and solicited reactions, criticisms, and modifications of the concepts.

Next, using the feedback and criticisms of these two groups, the task group worked to develop a conceptual framework for defining each factor. Eventually the notion of "elaborated continuum" was adopted. Conceptually, each factor was outlined like this:

Name of human dimension or factor is here	
Terms that describe learners who are "high" on this dimension are listed on this column.	Terms that describe learners who are "low" on this dimension are listed on this column.

Figure 3. Conceptual Outline of Human Factors That Affect Learning.

Considering the fact that we were dealing with a number of different factors or dimensions that were thought to be directly related to learning in school, the conceptual framework outlined in Figure 3 above was predicated upon several assumptions. For example, in Figure 4:

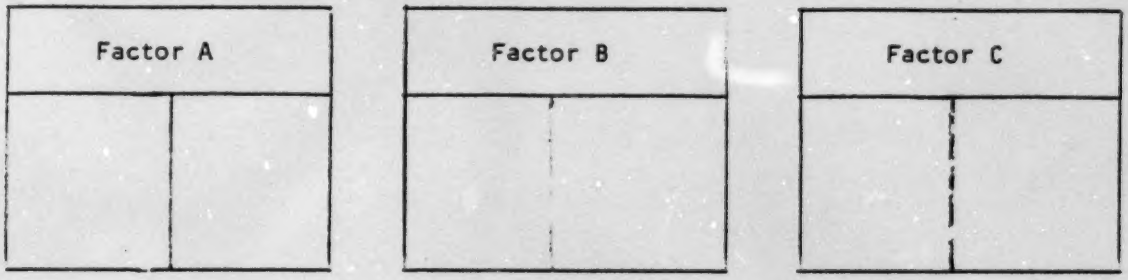

Figure 4. Three Hypothetical Factors That Affect Learning.

we can see graphically what was assumed to be true in reality, that Factor A is different than Factor B, and both are different than Factor C. However, what is not so obvious but was also assumed was that, even though each of these major human dimensions or factors are relatively discrete from each other, taken together the factors that we have identified comprise most of the significant dimensions of human existance within individuals that affect learning in school. By analogy, if these factors had been arrived at through statistical procedures, we would be assuming that the factors are orthogonally related to one another, and taken together, account for most of the variance in student's learning. Needless to say, the factors were not generated by statistical techniques (although that empirical check is an obvious possibility that could be accomplished), but the logic is the same.

The conceptual framework for the factors presumed further that the descriptor terms listed on the left hand column would characterize learners who were "high" on that same dimension or factor. The terms across from each other were opposites or antonyms, while those within the same column were similar or synonyms. Taken together, terms in the left hand comprise a definition of the high end of the continuum that is the human dimension or factor that affects learning, while terms in the right hand column comprise a definition of the low end of that same continuum.

Using all of the information that we had available to this point in time, we conceptualized eight factors using the conceptual framework that we had devised. Then, we searched the Handbook of Social Psychology, Handbook of Abnormal Psychology, Handbook of Research on Teaching, Roget's Thesaurus of Words and Phrases, and similar works in an effort to verify every descriptor term listed in either the left or right hand columns for every factor that we had identified.

Then we prepared a simple three page questionnaire. Using the 1974-1975 Directory of Members, American Educational Research Association, we randomly identified one person from each page of the 129 page director who was a member of both Division C (Learning and Instruction) and Division E (Counseling and Human Development). Questionnaires with the following instructions were sent to each of those 129 persons on February 1, 1975. Usable responses were received from fifty-two people.

When the responses by members of AERA were tabulated, the task group restructured the dimensions (e.g., combined "emotional" and "personality" into one factor), and added several new factors (e.g., "verbal expression," "auditory perception," and the like).

Finally, the task group took the ten factors upon which there seemed to be considerable concensus, took each factor "apart," and verified the "pieces" and the "whole" one more time. The descriptor terms included in the left and right hand columns were each typed on a separate piece of paper, and these items were talked about, redefined, modified, and finally clustered together again. All duplications were eliminated (so each factor would be discrete), and every descriptor item that went to make up a definition of the general factor was scrutinized separately and as a part of the specific factor or dimension that it helped define. These ten human factors then became the core of the human part of ACCS. After that the question became: "Can we find a way to relate curriculum characteristics to human characteristics in a valid and practical way?" Before we could do that, however, we had to identify the important characteristics of curriculum that might ultimately be tied to what is known about how individual learners vary and what affects their learning and how they develop and grow. The next section describes the effort to identify curriculum characteristics.

Identifying Characteristics of Curriculum: The primary concern of the task group developing what came to be called the Annehurst Curriculum Classification System, of course, was for the individual. What are individuals like? How might they be described in terms of factors that affect learning? Can we develop a way of relating curriculum materials to individual learners so that each student will learn more, better, and develop more fully than the conventional conceptions of curriculum make possible or allow? These are terribly difficult questions, too. The only place to go now was to curriculum materials themselves. Simply, the task group did three things: examined hundreds of pieces of curriculum material; generated a list of curriculum characteristics; and verified the list of terms developed through group discussion and further examination of other curriculum materials.

At the end of this three-step process (which required several weeks), the task group had a long list of words and phrases that they thought were characteristic of at least certain items of curriculum material. A number of problems had emerged, and the list had not actually been applied (i.e., "laid on" specific curriculum materials), but it was decided that the task group would proceed. The most creative task was ahead, but it was also the most difficult. Matching curriculum characteristics with human characteristics had to be accomplished, or the entire venture would fall far short of its goal.

Matching Curriculum Characteristics with Human Characteristics: To this point in the development of the curriculum system we had conceptualized and made operational a way of defining those dimensions of human existence that were thought to relate directly to learning, including students' interests in various subject matter areas, and we had an excellent beginning on thinking about and describing curriculum in terms that were directly related to curriculum materials themselves. To make the match between curriculum materials and learners complete, we began a five-step process: first, we attempted to create clusters or factors of curriculum characteristics; second, we matched curriculum characteristics with human characteristics, item by item; third,

we matched curriculum characteristics with human characteristics, cluster by cluster (i.e., factor by factor); fourth, we verified the logic of fit, factor by factor and item by item; and fifth, we applied the procedures to various curriculum materials to see if what we had done would "work." Each of these five steps is discussed below.

We started with a long list of hundreds of curriculum characteristics. Each member of the task group took the list home, cut the list up so that only one item was on each piece of paper, then sorted the items into categories or clusters that "seemed to go together." Each member of the task group did this independently in the privacy of their own home, then recorded the items (i.e., specific characteristics of curriculum material) in lists that represented the categories or clusters they had created in their own minds. Each member of the task group then submitted a recording of the clusters they had created, along with a "label" or "name" for each cluster of terms.

Twelve clusters were identified that seemed to have been generated by most of the members of the task group working independently. These twelve clusters were tentatively labeled:

content organization
physical appearance
personal growth orientation
emotive and experiential
logistical and managerial
cognitive
technological and technical
normative
self directed-other directed
sensory appeal
judgmental and evaluative
material content

These labels did not mean much, but it was apparent that some clustering of curriculum characteristics was possible, and with further work, those clusters might be developed to the point that they would have specific meaning. The task group decided, therefore, to attempt to make the match between curriculum characteristics and human characteristics that had been contemplated for such a long time.

Every word or phrase which had been included in the definition of the human characteristics was printed on a separate slip of pink paper. About 200 pieces of pink paper were involved. Then, every word or phrase which had been identified as a characteristic of curriculum materials was printed on a separate slip of white paper. Approximately 300 pieces of white paper were involved.

The task group then met around a large table with all of these pieces of paper spread out on the table. Each person tried to match one piece of pink paper with one piece of white paper. Working carefully and reading the words or phrases on the separate slips of paper, members of the task group struggled to see a "match" between curriculum characteristics and human characteristics. This process, which was slow and tedious, went on for several weeks. Great care was taken to be sure that pairs of items that were thought to "go together" were clipped and brought back as pairs the next week.

Over time, a definite pattern began to become evident. At first, one pink slip would seem to match one white slip fairly precisely, then it became apparent that one pink slip could actually be paired with several white slips. Later it became evident that one white slip might match several pink slips, too, so groups of pink slips that seemed to go with groups of white slips began to cluster together. After awhile these pairs of clusters (i.e., one white cluster and one pink cluster) began to appear around the edge of the table. Members of the task group would look across or move around the table and place individual items in whatever cluster seemed most fitting. Eventually, about ninety percent of all items were matched together in pairs of clusters this way.

At that point we went back to our original conceptualization of human dimensions and compared the current clusters of pink sheets (items from the human dimensions) with the previously developed definitions. The correspondence between the factors was close, but in those instances in which discrepancies did occur, further discussion and further study took place until a final "placement" was agreed upon.

The task, of course, was to develop a curriculum classification system that could be approached from either one of two directions, but always to lead to exactly the same result: a perfect "match" between a learner's needs and curriculum materials made available to help that individual student learn. Whether one approached the problem from the teacher's point of view or from the curriculum materials specialist's point of view. the end had to be the same: a perfect "match" between learner and materials.

In some ways, the task was something like digging a tunnel from both sides of the mountain at the same time: the efforts had to meet in the middle.

Relating Materials to Learning: In the course of attempting to create this preicse "match" between curriculum characteristics and human characteristics for each of the ten human factors that had been identified, a problem began to emerge. For example, a learner judged to be low in intellectual qualities would, according to the definitions developed in this curriculum system, tend to be characterized in these ways:

-irrational
-cannot integrate ideas
-shallow thinker
-slow to learn
-intolerant of complexity
-impulsive with ideas

What kind of curriculum materials would that kind of learner need? If the learner was low in intellectual qualities, as defined above, then it would seem that such a learner would probably do best with curriculum materials that were characterized in these ways:

-fact oriented
-concrete
-intentions explicit
-criteria explicit
-single organization
-evokes recognition
-evokes isolated type thought
-evokes recall

In other words, a low intellectual learner probably needs curriculum materials that are characterized as low in intellectual characteristics.

How about a learner who would have to be described as low on the social dimension, however? Would the same logic hold true? For example, a learner who is low on the social dimension would be described in these ways:

-uncommunicative
-loner
-uncooperative
-holds a grudge
-unfriendly
-callous
-unsympathetic
-prejudiced
-selfish
-disrespectful

Does that kind of learner need curriculum materials that would be classified in these (low) ways:

-stereotypical
-reflects negative concern for people who are different
-lacks sensitivity to people
-reflects negative concern for people and things
-prejudicial
-no interpersonal skills required

Is this the type of curriculum material that a learner who is low on the social dimension really needs? Probably not. It would be difficult to make a case that a learner who is uncooperative, uncommunicative, callous, selfish, and holds a grudge actually needs curriculum materials that are prejudicial, reflect negative concern for people who are different, and do not require interpersonal skills. Exactly the opposite kind of curriculum materials would be needed, it seems.

The task group eventually came to the conclusion that there were three different ways in which curriculum materials seem to match or "fit" human characteristics most precisely.

(1) A direct, one-to-one correspondence seems to apply to these two dimensions:

-experiential
-intellectual

(2) An indirect, inverse correspondence seems to apply to these four dimensions:

-motivation
-emotion-personality
-creative
-social

The third way in which curriculum materials seem to match or "fit" human characteristics most precisely might be described as follows:

(3) Certain curriculum materials are appropriate for learners who are deficient on these four dimensions:

-verbal expression
-auditory perception
-visual perception
-motor perception

Having gone through these steps and having engaged in the various processes described here, the Curriculum Task Group eventually reached a conclusion: We have conceptualized a curriculum classification system, but will it work?

The task group had forced themselves to interact with both ideas and curriculum materials throughout the entire developmental process. Every definition that had been devised and every dimension that had been identified had been held alongside many different kinds of curriculum materials at every step along the way. In that sense, members of the task group were confident that the system was practical. They were certain that it "would work." Even so, it had to be tested. It had to be tried.

Accordingly, the members of the Curriculum Task Group then began the process of "trying the system out" to see if curriculum materials could actually be classified accurately and reliably with the definitions and procedures that had been devised. Over a period of several months, therefore, the task group - working as a group - began to classify curriculum materials.

At first they would spend an entire afternoon session classifying several pieces of curriculum material on one dimension only. It took several months just to "go through" the entire classification system that way. Later they would classify one piece of curriculum material according to all sixteen decision areas - discipline, subject, media format, age level, experiential, intellectual, etc. - as a total group. Still later, different individuals would classify one piece of curriculum material according to all sixteen decision areas, then the members of the task group would compare the decisions they had made.

With experience, people got to the point that there would generally be about 85 percent agreement among the various classifiers regarding the classification decisions made. Subsequent experience with other persons suggests that after ten or twelve hours of instruction, classifiers will achieve about 80 percent agreement on the decisions that they make.

Problems Involved in Using ACCS

Another way of describing the steps that the Curriculum Task Group followed or the way in which ACCS might be employed is reflected in these eleven steps:

Developmental

(1) Identifying areas of learners' interests (i.e., subject matter).

(2) Organize areas of interest into a thesaurus.

(3) Identify human factors that affect learning.

(4) Relate human factors to curriculum characteristics.

(5) Identify materials to be included in the system.

(6) Classify materials re/ steps 2 and 4 above.

Operational

(7) Assess individual learners' interests.

(8) Assess individual learners' human factors.

(9) Select curriculum materials re/ steps 7 and 8 above.

(10) Provide materials to learner (i.e., "teach").

(11) Repeat steps 7 through 10 above.

As is outlined above, steps one through six were the developmental processes that were followed. Steps seven through eleven represent the steps that a teacher would follow to use ACCS in a school. The possibility for error exists at every step. Exactly the same possibilities for error exists when conventional curriculum systems are utilized, although the awareness of possible error would often be minimized.

Suppose we assume, for purposes of discussion, that each of the eleven steps described above might be accomplished "correctly" or "incorrectly." That is undoubtedly too crude a distinction to make in the real world of teaching and learning, since some steps (number three, for example: identifying human factors that affect learning) might be done correctly in part, and incorrectly in part. Granting that that is a serious oversimplification, the possibility also arises that an error in one step could conceiveably cancel out another error made in a later step, producing the right response for the wrong reasons.

In a logical sense, there are five different types of "fits" or "matches" that can be created with ACCS. Two of these matches would be "correct", in the technical sense, and three would be incorrect. If we look at the various ways in which decisions might be made - regarding the learner and regarding the curriculum material - then these five types of "match" and "mismatch" become more apparent. In the illustration that follows, only one dimension will be considered. In actual practice, every aspect of human existence that affects learning ought to be taken into consideration, if we can figure out a way to do that. That is an extremely difficult task to accomplish, although ACCS is clearly intended to help teachers do that much more accurately and considering a greater number of factors than they generally do.

In the illustration below, there are four basic phenomena that are under consideration: the nature of the learner, the nature of the curriculum materials, the way that a teacher might assess or classify a learner, and the way a curriculum materials specialist might classify a piece of curriculum material. The nature of both the learner and the materials (i.e., the way they actually are in reality) will be described as "reality." The way in which a teacher might classify a learner or a curriculum specialist might classify a piece of material will be referred to as "classified." The "nature of the decision" column will describe what would actually occur if ACCS had been used in these particular ways. In a hypothetical sense, there are sixteen possible combinations of learner - material - reality - classification for each of the ten human dimensions for which curriculum materials can be classified.

In Figure 5 below, "LE" means "low experience," and "HE" means "high experience," whether the reality or classification applies to the learner or to the curriculum materials.

		Learner	Material	Nature of Decision
1.	Reality	LE	HE	ACCS Rejects:
	Classified	LE	HE	Correct
2.	Reality	LE	HE	ACCS Selects:
	Classified	LE	LE	Error
3.	Reality	LE	LE	ACCS Rejects:
	Classified	LE	HE	Error
4.	Reality	LE	LE	ACCS Selects:
	Classified	LE	LE	Correct
5.	Reality	HE	HE	ACCS Rejects:
	Classified	LE	HE	Error
6.	Reality	HE	HE	ACCS Selects
	Classified	LE	LE	Error
7.	Reality	HE	LE	ACCS Rejects:
	Classified	LE	HE	Error
8.	Reality	HE	LE	ACCS Selects
	Classified	LE	LE	Error
9.	Reality	LE	HE	ACCS Selects:
	Classified	HE	HE	Error

		Learner	Material	Nature of Decision
10.	Reality	LE	HE	ACCS Rejects:
	Classified	HE	LE	Error
11.	Reality	LE	LE	ACCS Selects:
	Classified	HE	HE	Error
12.	Reality	LE	LE	ACCS Rejects:
	Classified	HE	LE	Error
13.	Reality	HE	HE	ACCS Selects:
	Classified	HE	LE	Error
14.	Reality	HE	HE	ACCS Rejects
	Classified	HE	LE	Error
15.	Reality	HE	LE	ACCS Selects
	Classified	HE	HE	Error
16.	Reality	HE	LE	ACCS Rejects:
	Classified	HE	LE	Correct

Figure 4. Possibility for Error Using ACCS

Although the logic of the relationship depicted between curriculum materials and learners with ACCS is actually quite simple, Figure 4 may appear to be complex. The reader must keep four things in mind in trying to understand the nature of the decision-making process that is involved with ACCS, and the potentiality for error:

(a) There is a reality to the learner. The learner is either high or low on the experience dimension, as defined by ACCS.

(b) There is a reality to the curriculum materials. A piece of material is either high or low on the experience dimension, as defined by ACCS.

(c) The teacher makes a decision to classify the learner on the experience dimension. That decision may be correct or incorrect.

(c) The curriculum materials specialist makes a decision to classify the material on the experience dimension. That decision may be correct or incorrect.

Consider four illustrations. In instance number one, a low experience learner was assessed by the teacher as low experience (correct decision) and high experience materials were classified by the materials specialist as high experience (correct decision). ACCS correctly rejects the materials for use with that learner.

In instance number six, a high experience learner was assessed by the teacher as low experience (incorrect decision) and high experience materials were classified by the materials specialist as low experience (incorrect decision). ACCS incorrectly selects the materials for use with that learner.

In instance number ten, a low experience learner was assessed by the teacher as high experience (incorrect decision) and high experience materials were classified by the materials specialist as low experience (incorrect decision). ACCS rejects the materials for use by that learner. The correct decision was made by the system but for the wrong reasons.

In instance number fourteen, a high experience learner was assessed by the teacher as high experience (correct decision) and high experience materials were classified by the materials specialist as low experience (incorrect decision). ACCS incorrectly rejects the materials for use by that learner.

The purpose of this analysis has been to identify both the types and frequency of errors that are possible if the Annehurst Curriculum Classification System is used. These possibilities for error exist in every curriculum system. The intention here has been to bring this potentiality for error to the surface, so to speak, where it can be examined and discussed. Only if educators know where they are apt to make mistakes and the nature of the mistake itself can they be in a position to eliminate errors and improve educational operations.

The Annehurst Curriculum Classification System is a precise and differentiated way of thinking about students and working with curriculum materials. This paper has described how the system was developed, difficulties involved in using the system, and potentiality for errors if ACCS is used in a teaching-learning situation in a school.

In the last section a limited discussion of other ways in which ACCS might be employed: research, staff development, and curriculum materials procurement, for example.

Other Uses of ACCS

ACCS was developed to help classroom teachers personalize their teaching and individualize the curriculum more fully and more effectively than teachers are able to accomplish typically with conventional curriculum systems. However, it now appears that ACCS holds potential for educators in addition to teaching. Four possible areas that hold promise are these: analysis of existing curriculum materials collections; purchase of new curriculum materials; research; and staff development. Each of these four areas is briefly discussed below. The discussion which follows, however, must be seen as illustrative rather than definitive.

Analysis of Existing Collections: If all of the materials available to a teacher or in a school were classified according to ACCS, questions such as the following could be answered quickly:

(1) How many curriculum materials are presently available in the area of _____? (e.g., multiplication, geography of South America, history of Communism, how to operate a wood lathe, etc.

(2) What kinds of curriculum materials are presently available for a small group of eleven year old learners who are high in intelligence and experience characteristics but low in creativity and social abilities?

(3) What kinds of curriculum materials are presently available for a sixteen year old learner who is high in intelligence, experience, creativity, and emotion-personality, low in motivation and verbal expression, and especially interested in the impact of John Marshall on the judicial processes of constitutional government in the United States?

Another kind of analysis could include a careful study of which curriculum materials were actually used during a given period of time, say one academic year. For example, a careful study of the materials used by all of the teachers in a high school English department, might indicate that only 11 percent of the materials were classified as "high creative", while 78 percent were classified as "high intelligence. Such data could be helpful to teachers as they worked to understand what they were teaching and how they were teaching.

Purchasing Curriculum Materials: Materials made available by publishers at conferences or through sales persons could be classified according to ACCS procedures and definitions. Those who make decisions about purchasing materials could then be more rational and more precise in those decisions than conventional procedures allow. Over time, of course, the use of ACCS as one consideration in the curriculum materials procurement process might begin to work backwards and exert influence on materials producers. At the very least, using ACCS would bring a precision and clarification to curriculum materials selection processes that would minimize the social and political pressures that often go into such procedures.

Research Possibilities: Several different kinds of research possibilities became apparent to members of the Curriculum Task Group during the course of developing ACCS. Two research questions are posed below:

(1) What kinds of curriculum materials are presently being used with eleven year old learners across the country today?

(2) What kinds of curriculum materials do particular types of learners need to develop and learn and grow?

The first question suggests a type of descriptive research that could generate information about curriculum materials in use in schools that parallel the descriptive studies of instruction that have been accomplished by researchers with various observational systems over the years.

The second question suggests a type of controlled, experimental research that would enable educators, over time, to test out hypotheses about what kinds of curriculum materials different learners actually need. Instead of postulating that all learners need to learn to read by using materials that have a heavy phonics emphasis, for example, or that all learners need to "memorize the multiplication tables" or "discover scientific principles in the same way that scientists do," specific conclusions pertaining to particular learners with particular characteristics experiencing particular materials characterized in particular ways could be obtained. Over time, we might come to understand the nature of learner - materials interaction that would be most appropriate to foster learning.

Staff Development Possibilities: It may be that ACCS could be used in staff development activities to help teachers learn to assess individual learners, classify curriculum materials, develop a thesaurus for their school, or any of several other different things. These ideas will not be described here in detail, but the experience of the Curriculum Task Group leads me to believe that ACCS may be a useful and stimulating tool to help teachers understand the concept and reality of individuality and to become significantly more knowledgeable about and creative with curriculum materials.

Summary

This paper has outlined, in a fairly sketchy way, six steps that were followed by nine persons over a four year period to develop a systematic way of classifying, organizing, storing, and retrieving curriculum materials in terms of human variability as that relates to learning in school. The result of this development effort has been labeled the Annehurst Curriculum Classification System, or ACCS, for short. ACCS is intended to be a practical way for teachers to individualize instruction by matching learner's interest, abilities, and needs with curriculum materials that are precisely appropriate for each learner involved. Further use and research with the system will be needed.

Footnotes

[1] Many persons have participated directly and intensively in the development of the Annehurst Curriculum Classification System. The following persons have been involved regularly over most of a four year period of time: Kathy Bobb, David Clinefelter, Lynn Fitzpatrick, Theresa Harrington, Cathy Hart, Ann Hoakenson, Jessica Jahnke, Betty Marschall, Glenda McGinniss, Philip Morgan, Troy Mills, Joan Robinson, Mary Slane, and David Stanley.

[2] Jack Frymier. Annehurst Curriculum Classification System: A Practical Way to Individualize Instruction (West Lafayette, In.: Kappa Delta Pi, 1977). Available after July 1, 1977.

[3] Kurt Lewin. Principles of Topological Psychology (New York: McGraw Hill, 1936).

[4] David E. Hunt. "Person-Environment Interaction: A Challenge Found Wanting Before It Was Tried," Review of Educational Research XLV (Spring, 1975). Pp. 209-230.

[5] Jack R. Frymier, et al. A School For Tomorrow (Berkeley: McCutchan Publishing Co., 1973), Chapter One.

[6] Ralph E. Tyler. Principles of Curriculum and Instruction (Chicago: University of Chicago Press, 1950).

[7] Virgil Herrick. Strategies for Curriculum Development (Columbus: Charles E. Merrill, Publishers, 1965). Chapter One.

[8] Earl C. Kelley. Education for What Is Real (New York: Harper and Row, 1947). See also Arthur W. Combs and Donald Snygg. Individual Behavior (New York: Harper and Bros., 1957). Revised Edition.

[9] Ibid.

[10] Frymier. A School For Tomorrow. Chapter Three.

[11] Donella H. Meadows. The Limits to Growth (New York: Universe Books, 1972). Chapter Three.

EXPERIENTIAL	
has traveled widely	has not traveled much
stimulus rich background	stimulus poor background
has read a lot	has read very little
has mastered previous learnings	has not mastered previous learnings
has skills of learning	lacks skills of learning
high achievement	low achievement
extensive interests and activities	limited interests and activities

INTELLECTUAL	
rational	irrational
can integrate ideas	cannot integrate ideas
contemplative	shallow thinker
quick to learn	slow to learn
tolerant of complexity	intolerant of complexity
reflective with ideas	impulsive with ideas

MOTIVATION	
energetic	lazy
persistent	easily discouraged
shows initiative	lacks initiative
enthusiastic	bored
tries hard	gives up
purposeful	aimless
inquisitive	indifferent
future oriented	present oriented
curious	uninterested
able to delay gratification	demands instant gratification

EMOTIONAL - PERSONALITY	
patient	impatient
open-minded	closed-minded
accepts blame	blames others
good natured	cranky
has sense of humor	lacks sense of humor
confident	lacks assurance
mature	immature
optimistic	pessimistic
independent	dependent
deliberate	impulsive
internal locus of control	external locus of control
dependable	undependable
responsible	irresponsible

CREATIVITY	
innovative	traditionalist
flexible	rigid
original	copyist
risk taker	cautious
fluent with ideas	restricted with ideas
autonomous	conforming
able to elaborate	difficulty elaborating
able to form new patterns or relationships	difficulty forming new patterns or relationships
imaginative	unimaginative

SOCIAL	
communicative	uncommunicative
participator	loner
cooperative	uncooperative
forgiving	holds a grudge
friendly	unfriendly
capable	callous
sympathetic	unsympathetic
tolerant	prejudiced
altruistic	selfish
respectful	disrespectful

VERBAL EXPRESSION	
eager expression	blank expression
fluent speech	labored speech
responds in complete sentences	one-word response
relevant responses	responses not relevant
pronounces common words properly	mispronounces common words
uses correct plural	uses incorrect plural
seldom makes grammatical errors	frequently makes grammatical errors
seldom makes syntactical errors	frequently makes syntactical errors
responds immediately	delays in responding

AUDITORY PERCEPTION	
can concentrate in a noisy situation	easily distracted by noises
perceives phonic sounds accurately	cannot perceive phonic sounds
recognizes words which are partially presented	cannot recognize a word when partially presented
understands words in songs	cannot understand words in songs
able to recall how things sound	cannot recall how things sound
able to restate words or sounds in sequence	cannot restate words or sounds in sequence
able to recall or follow directions	cannot recall or follow directions
can count by rote	cannot count by rote
can learn days of week, seasons, etc.	cannot learn days of week, seasons, etc.
does not reverse sounds within words	reverses sounds within words
does not reverse words within sentences	reverses words within sentences

VISUAL PERCEPTION	
follows symbols from left to right easily	difficulty following symbols left to right
can sequence and match both objects and symbols	cannot sequence or match either objects or symbols
easily distinguishes an object from its background	cannot distinguish an object from its background
comprehends a variety of visual stimuli	easily confused by visual stimulation
copes with color coded materials	difficulty with color coded materials
follows material in sequence without skipping sections	skips sections
easily identify similar objects or symbols in varying contexts	difficulty identifying objects or symbols in varying context
recalls visual stimuli in sequence easily	difficulty with visual sequential memory
discriminates between horizontal, curve, and diagonal	difficulty discriminating horizontal, curve, and diagonal
coordinates hand and eye movements skillfully	cannot coordinate hand and eye movements
forms letters easily	difficulty forming letters
completes incomplete visual forms or patterns	unable to complete incomplete forms or patterns

MOTOR PERCEPTIONS	
knows name and location of all body parts	does not know all body parts and locations
manipulates small objects easily and skillfully	has difficulty manipulating small objects
coordination between hand and eye is smooth	has difficulty with hand-eye coordination
maintains body balance without difficulty	has difficulty maintaining body balance
moves rhythmically without difficulty	has difficulty moving rhythmically
has no difficulty with laterality and directionality	has difficulty with laterality and directionality
has no difficulty with spatial relationships	has difficulty with spatial relationships
can move hand and arm past midline of body easily while body is stationary	has difficulty moving hand and arm past midline of body while body is stationary

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EXPERIENTIAL	
special terminology	common vocabulary
provides vicarious experience	provides direct experience
requires special training to use	no special training required
advanced/difficulty reading level	simple/beginning reading level
advanced in nature	introductory in nature
representative of reality	original or actual thing
examples and illustrations are complex and difficult to understand	examples and illustrations are simple and understandable

INTELLECTUAL	
concept oriented	fact oriented
abstract	concrete
intentions implicit	intentions explicit
criteria implicit	criteria explicit
complex organization	simple organization
evokes analysis type thought	evokes recognition
evokes synthesis type thought	evokes isolated type thought
evokes evaluative type thought	evokes recall

MOTIVATION	
attractive	plain
stimulating	calming
evocative	routine
examples provocative	examples lacking or not provocative
marked contrast	contrast not evident
compelling	bland
unique	ordinary
complex	simple or uniform
immediate feedback	feedback not available
activity oriented	passivity oriented

EMOTIONAL - PERSONALITY	
ambiguous	set and unequivocal
change oriented	stasis oriented
ego involving or reflects positive sense of self esteem	non-ego involving or reflects negative sense of self esteem
reflects appropriate expression of emotion	reflects inappropriate expression of emotion
decisions controlled by the learner	decisions controlled by others or by chance
requires students to makes decisions and abide by the consequences	does not require students to make decisions and/or abide by the consequences

CREATIVE	
evokes imagination	evokes imitation
open-ended	closed
versatile	limited
alternative responses possible	restricted responses required
nondirective	directive
thought provoking	recall oriented
interrogative	declarative
unusual	predictable
novel	conventional
fanciful	factual
does not lend itself to being judged right or wrong	does lend itself to being judged right and wrong

SOCIAL	
respects individuality	stereotypical
reflects positive concern for people who are different	reflects negative concern for people who are different
reflects sensitivity to people	lacks sensitivity to people
reflects positive concern for people and things	reflects negative concern for people and things
nonprejudicial	prejudicial
fosters interpersonal skills	no interpersonal skills required

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VERBAL EXPRESSION (Appropriate)	(Does Not Apply)
requires expanded verbal response	requires simple yes-no verbal response
requires sequencing	does not require sequencing
requires categorizing	does not require categorizing
requires differentiation of opposites	does not require differentiation of opposites
demonstrates spatial relations	does not demonstrate spatial relations
requires discrimination of parts and wholes	does not require discrimination of parts and wholes
requires discrimination of singular and plural forms	does not require discrimination of singular and plural forms
verbal clues given	verbal clues are not given
emphasizes rhythm of language	does not emphasize rhythm of language

AUDITORY PERCEPTION (Appropriate)	(Does Not Apply)
requires organizing, reproducing, or sequencing of sounds and words	does not require organizing, reproducing, or sequencing of sounds and words
requires identifying similarities	does not require identifying similarities
requires identifying differences	does not require identifying differences
auditory directions required	auditory directions not required
identifying specific sounds	does not require identifying specific sounds
record or tape tasks	non-learning tasks
requires learning rhymes, songs, and finger plays	does not require learning rhymes, songs, and finger plays

VISUAL PERCEPTION (Appropriate)	(Does Not Apply)
requires visual perspective	no visual perspective required
requires the student to identify similarities and differences	does not require the student to identify similarities and differences
requires the student to organize, reproduce, and remember a sequence of visual stimuli	does not require the student to organize, reproduce, and remember a sequence of visual stimuli
requires finding a specific object against a crowded visual environment or background	does not require finding a specific object against a visual environment or background
requires the use of body parts of one or both sides of the body	does not require the use of body parts of one or both sides of the body

MOTOR PERCEPTION (Appropriate)	(Does Not Apply)
requires body balance	does not require body balance
requires locomotor activity	does not require locomotor activity
involves body parts	does not involve body parts
requires imitative movements	does not require imitative movements
requires fine motor coordination	does not require fine motor coordination
requires using body parts of and or both sides of the body	does not require using body parts of one or both sides of the body
requires hand and arm movements past the midline of the body while head and body are stationary	does not require hand and arm movements past the midline of the body while head and body are stationary

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1 ☐ DISCIPLINE — Name of Item _____

2 ☐ SUBJECT — Name of School _____

3 ☐ DIVISION — Date Classified _____

4 ☐ TOPIC — Name of Classifier _____

5 ☐ MEDIA

6 — Age Level: 5-8 (a) | 9-12 (b) | 13-16 (c) | 17-up (d) — Verbal Expression: A (e) | NA

7 — Experiential: H (a) | L (b) — Intellectual: H (c) | L (d) — Auditory Perception: A (e) | NA

8 — Motivation: H (a) | L (b) — Emotion-Personality: H (c) | L (d) — Visual Perception: A (e) | NA

9 — Creative: H (a) | L (b) — Social: H (c) | L (d) — Motor Perception: A (e) | NA

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